

Appl. No. : **09/514,999**
Filed : **February 29, 2000**

The upper limit is not important, and one of ordinary skill in the art can readily practice the claimed invention without an indication of the upper limit.

Comparison

In Claim 9 as amended herein, it is clear that compared is a method without the decomposition step.

Thus, Applicant believes that the claims as amended herein are reasonably described in the specification. Applicant respectfully requests withdrawal of this rejection.

Rejection Under 35 U.S.C. § 112, second paragraph

Claims 2-9 have been rejected under 35 U.S.C. § 112, second paragraph, with regard to the following terms or wordings:

Markush grouping

Claim 9 has been amended to correct the improper Markush grouping by using "and".

"a high molecular weight substance"

This phrase has been deleted from Claim 9.

"recovering polyamine"

The term "polyamine" has been changed to "polyamines" (including more than one polyamine). Further, "manufacturing a polyamine composition" in the preamble of Claim 9 has been changed to --obtaining polyamines-- to clarify that the target component is polyamines, not a composition incidentally including a trace of polyamines.

Wavy line

Each wavy line used in Claims 4 and 7 have been changed to a dash.

"decomposition step"

The decomposition step" in Claims 4 and 5 has clear antecedent basis in Claim 9 as amended herein.

Accordingly, Applicant believes that the claims as amended herein are not indefinite. Applicant respectfully requests withdrawal of this rejection.

Rejection Under 35 U.S.C. § 103

Claims 2-5 and 7-9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanekawa taken with Sato, Ajinomoto, and Sugimoto. Claim 9 has been amended to clarify the

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invention. Claim 9 and the remaining dependent claims could not be obvious over the prior art as explained below.

Polyamines are aliphatic hydrocarbon, not peptides or amino acids or nucleotides

Tanekawa teaches a process of producing a yeast extract containing GMP (guanosine-5'-monophosphate). The objective is obtaining flavoring agents. The other references except for Sato are the same as Tanekawa in this respect (i.e., recovering peptides, amino acids, or nucleotides) and are irrelevant to the recovery of polyamines.

Further, Tanekawa hydrolyzes yeast cells using alkali, but this is for obtaining a yeast extract (i.e., yeast somatic components). In Tanekawa, the yeast extract is not subjected to alkali hydrolysis, but to enzymatic hydrolysis to increase GMP (column 5, line 62 through column 6, line 17).

Sato teaches away from the present invention

Sato teaches recovery of polyamines. Sato discloses treatment with a sodium hydroxide solution simply for neutralization purposes. In Sato, in order to separate polyamines from high molecular weight substance (e.g., RNA), highly acidic conditions are used. Under highly acidic conditions (pH 2 or lower), RNA is precipitated while polyamines can be recovered from the supernatant. In contrast, in the present invention, yeast somatic components are subjected to nuclease digestion or alkali hydrolysis (this cannot be a highly acidic condition). The present inventors discovered that a yield of polyamines can increase by double or more by conducting nuclease digestion or alkali hydrolysis for an effective time period (e.g., 15 hours in Example 1, 18 hours in Examples 2 and 3). This decomposition step is in no way suggested in Sato or the other references. The use of highly acidic conditions in Sato teaches away from the present invention.

In conclusion, none of the references suggests that the decomposition step by nuclease digestion or alkali hydrolysis significantly increase a yield of polyamine.

“To establish a *prima facie* case of obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious.” (M.P.E.P. § 2143.03). Thus, Claim 9 could not be obvious over the prior art, and at least for the reasons

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described above, the remaining claims also could not be obvious over the prior art. Applicant respectfully requests withdrawal of the rejections.

CONCLUSION

In light of the Applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By:



Katsuhiro Arai
Registration No. 43,315
Agent of Record
620 Newport Center Drive
Sixteenth Floor
Newport Beach, CA 92660
(949) 760-0404

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 4, 7, and 9 have been amended as follows:

4 (Twice amended) The method according to Claim 9, wherein the decomposition step is conducted by digesting the yeast somatic components with nuclease added to a solution containing the yeast somatic components, at a pH value of 3-10 and at a temperature of 10-70°C.

7. (Twice amended) The method according to Claim 9, wherein the yeast somatic components are an extract obtained from yeast using hot water at a pH value of 4-8 and at a temperature of 90-100°C, wherein sodium chloride is added to a yeast suspension with a yeast concentration of 5-25% to make a salt concentration of 1-10%.

9 (Amended) A method of manufacturing obtaining a polyamines composition, comprising the steps of:

providing yeast somatic components selected from the group consisting of extracts obtained from yeast by physical crushing, or extracts obtained from yeast by autolysis, or extracts obtained from yeast with hot water, and yeast RNA compositions;

subjecting said yeast somatic components to nuclease digestion or alkali hydrolysis as a decomposition step to decompose a high molecular weight substance bound with polyamine wherein for a time period effective to increase a yield of polyamines recovered in a subsequent recovery step by the amount of polyamine dissociated from said yeast somatic components is approximately double two times or more as compared with a yield of polyamines recovered in the subsequent recovery step without this decomposition step; and

recovering polyamines from said digested/hydrolyzed/decomposed components.